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Transfusion-Associated Human T-Lymphotropic Virus Type III/ Lymphadenopathy-Associated Virus Infection From a Seronegative Donor — Colorado

In November 1985, a blood donor at a Colorado blood-collection center was found to be seropositive for human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV)* antibody by both the enzyme-linked immunosorbent assay (ELISA) and Western blot methods. He had previously donated at the center in April and August 1985, when he had been seronegative by ELISA. Both recipients from the August donation, one of whom had no other risk factors for acquisition of HTLV-III/LAV, were subsequently found to be seropositive. Both recipients of the April donation were seronegative. The donor had probably been infected through sexual contact 12 weeks or less before the August donation. This is the first reported transmission of infection from a blood donor that has occurred despite routine screening for HTLV-III/LAV antibody in blood banks and plasma centers.

Details of the donor and recipient investigation are as follows:

Donor. The donor was a 31-year-old man who had donated blood at the same center in April, August, and November 1985. He was seronegative in April (optical densities of Abbott ELISA on sample/control = 0.052/0.160) and August (0.034/0.142), but seropositive by ELISA (0.926/0.173) and Western blot in November. His blood from the November donation was discarded, and physicians of the recipients from the August donation were notified by the blood center of the possible transmission of HTLV-III/LAV from these blood products.

When interviewed in April 1986, the donor stated that he had had sexual contact with one male partner, with the first exposure taking place on May 15, 1985. No condoms were used. His only other sexual partner was a man in 1974. He denied intravenous (IV) drug use or history of blood transfusion. He had no history of acute viral illnesses or symptoms of acquired immunodeficiency syndrome (AIDS) or AIDS-related complex (ARC) in 1985 or 1986. Physical examination in December 1985 was normal. Repeat ELISA testing in April 1986 revealed a high absorbency value (> 2.000/0.125), and Western blot was once again positive. Attempts at locating previous sera for antibody testing were unsuccessful.

Donor's Partner. The donor's sexual partner was a 22-year-old man who corroborated the donor's history of their initial sexual contact on May 15, 1985. He had been homosexually active since 18 years of age. He denied IV drug abuse or history of blood transfusion. After notification by the donor of his positive antibody status, the partner was tested for HTLV-III/LAV in November 1985 and was seropositive by ELISA and Western blot; these findings

*The Human Retrovirus Subcommittee of the International Committee on the Taxonomy of Viruses has proposed the name human immunodeficiency virus (HIV) for this virus. (Science 1986;232:697)

HTLV-III/LAV – Continued

were reconfirmed on a separate specimen in April 1986. He had not previously been tested for HTLV-III/LAV antibody.

Recipient 1. Recipient 1 was a 60-year-old man who underwent surgery in August 1985. He received from 15 different donors six units of packed red blood cells, four units of fresh frozen plasma, and six units of platelets (including one unit from the previously described donor). He had been married for 30 years and denied extramarital sexual contact, either heterosexual or homosexual, or any previous blood transfusions or IV drug abuse. In February 1986, he had no symptoms of AIDS or ARC and had a normal physical examination. The HTLV-III/LAV antibody test was positive by ELISA and Western blot and reconfirmed on a separate specimen in March 1986. His wife was seronegative for HTLV-III/LAV antibody in April 1986.

Recipient 2. Recipient 2 was a 57-year-old man who underwent surgery in August 1985. He received two units of platelet-poor whole blood (including one unit from the previously described donor) and one unit of packed red blood cells. During the postoperative period, he had unexplained fever and diarrhea that persisted for 6 weeks and was associated with a 20-pound weight loss. Stool specimens were negative for bacterial pathogens and ova and parasites, including cryptosporidia. In October 1985, he was tested for HTLV-III/LAV antibody for reasons unrelated to the blood transfusion and was positive by ELISA and Western blot, which was confirmed on a separate specimen in April 1986. He had been divorced for 12 years and was strictly homosexual since that time, with multiple partners.

Other investigative findings. The blood donated in April 1985 was given to two recipients, and both were seronegative by ELISA when tested in May 1986.

One other person was a common donor to recipients 1 and 2 in August 1985. This person was retested in April 1986 and was negative by ELISA for HTLV-III/LAV antibody. Of the 13 remaining donors to recipient 1, 11 were seronegative when retested 5 months or more after the August donations. Two donors reside outside Colorado and have not been retested. Of the two remaining donors to recipient 2, both were seronegative when retested 6 months or more after the August donations.

Reported by CA Raevsky, DL Cohn, MD, FC Wolf, MPA, FN Judson, MD, Colorado Dept of Health, Denver Disease Control Svc, SW Ferguson PhD, State Epidemiologist, TM Vernon, MD, Executive Director, Colorado Dept of Health; AIDS Program, Center for Infectious Diseases, CDC.

Editorial Note: This is the first report of HTLV-III/LAV transmission from a person whose blood tested negative for HTLV-III/LAV antibody at the time of blood donation. As with previous reports that have documented the presence of the virus in a small number of persons who have no detectable antibody, this donor appears to have had a recent infection (*1,2*). Most infected people develop antibody within 2-3 months of infection (*2-6*).

The current risk of transfusion-associated infection is small. The prevalence of positive Western blot tests among units screened by the American Red Cross in early 1985 suggests that 0.04% of all donated units may have been potentially infectious (*7*). This prevalence declined to 0.02% in early 1986 (*8*). Currently available screening tests detect HTLV-III/LAV antibody in the great majority of infected persons. Since antibody may not be detectable in blood from donors with very recent infections, the safety of the blood supply also requires deferral of donation by persons at increased risk for HTLV-III/LAV infection.

Donor-deferral programs, initially implemented in blood banks in March 1983 and subsequently refined, provide all prospective donors with educational information on the practices associated with an increased risk of HTLV-III/LAV infection. Evidence suggests that most persons at increased risk have stopped donating blood (*9-11*), but a few such individuals continue to donate. The donor described in this report said he felt he was not at risk for infection because he had only one sexual partner. Although a steady sexual relationship with a single partner is generally safer with regard to HTLV-III/LAV infection than relationships with multi-

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ple sexual partners, men who have had sexual contact with another man since 1977 must not donate blood (*12*).

Efforts are continuing to assure maximum effectiveness of donor-deferral programs (*13,14*). As an example, blood collection agencies have agreed to implement procedures in which prospective donors are asked to sign an expanded consent statement. The statement indicates that the prospective donor has reviewed and understands the informational material provided and that donors who are at increased risk for transmission of HTLV-III/LAV or other infectious agents will not donate blood or plasma for transfusion to another person.

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Non-A, Non-B Hepatitis Associated with a Factor IX Complex Infused During Cardiovascular Surgery — Arizona

On June 14, 1985, the Division of Disease Control Services, Arizona Department of Health Services, was notified by infection-control personnel at a local hospital of 13 cases of non-A, non-B hepatitis among patients who had undergone cardiovascular surgery at the hospital during the preceding 6 months. All the patients had received factor IX complex produced by Alpha Therapeutic Corporation (Brand B) because of bleeding during their surgery.

A systematic review of pharmacy records for 1984 and 1985 determined factor IX complex usage patterns. Between January 1, 1984, and June 3, 1985, 172 patients had received factor IX complex during cardiovascular surgery (81 Brand A; 90 Brand B; one Brand C). Brand B factor IX complex was added to the hospital pharmacy in October 1984.

Cases were identified through questionnaires distributed to all physicians involved with the care of three groups: the cohort of Brand A factor IX complex recipients who survived more than 2 weeks following surgery, the cohort of Brand B factor IX recipients who survived

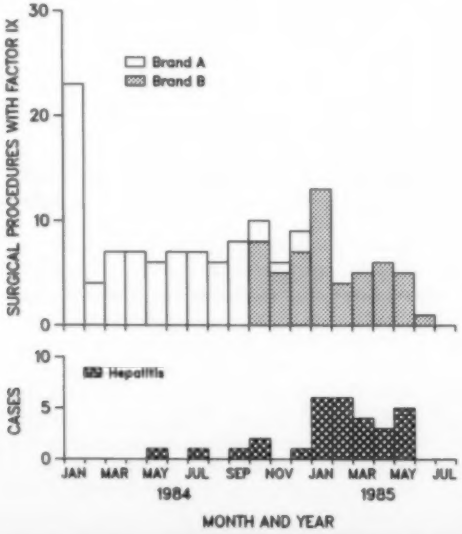
Non-A, Non-B Hepatitis — Continued

more than 2 weeks, and a sample from the cohort of 1,625 cardiovascular patients who received no factor IX complex during surgery and survived more than 2 weeks (matched to the Brand B group for age, sex, type of operation, and date of surgery within 1 month). Completed information was received for 55 (74%) of 74 Brand A factor IX complex recipients, 64 (85%) of 75 Brand B factor IX complex recipients, and 59 (79%) of 75 in the matched nonrecipient sample.

A case of postsurgical non-A, non-B hepatitis was defined as a patient who developed an illness with a discrete date of onset following surgery and characterized by: (1) jaundice and/or elevated serum aminotransferase (ALT) levels greater than 2½ times the upper limit of normal, lasting at least 1 week; (2) negative serologic tests for IgM hepatitis A virus antibody (anti-HAV) and hepatitis B surface antigen (HBsAg) during illness; (3) no evidence of underlying liver disease or recent history of hepatotoxic drugs in dosages likely to produce liver dysfunction. A probable case was defined as above, but with no or incomplete serologic testing for markers of viral hepatitis.

The investigation identified 23 cases and seven probable cases of non-A, non-B hepatitis; 27 were among Brand B factor IX complex recipients, and three were among Brand A factor IX recipients (Figure 1). The most commonly observed symptoms were: fatigue (85%), anorexia (81%), nausea and/or vomiting (59%), dark urine (52%), light stools (41%), and abdominal pains (37%); 19 (63%) were jaundiced, including 17 Brand B factor IX recipients and two Brand A factor IX recipients. Liver function tests showed median peak ALT of 801.5 IU (range 153-2,824) and bilirubin 5.3 mg/dl (range 0.4-22.9 mg/dl). Six (22%) patients required rehospitalization because of hepatitis-related symptoms; one patient died, with non-A, non-B hepatitis reported as a contributing cause of death. The incubation period for cases among

FIGURE 1. Cases and probable cases of postsurgical non-A, non-B hepatitis in factor IX concentrate recipients, by month and factor IX usage patterns in cardiovascular surgery patients — Arizona, January 1, 1984-June 3, 1985



Non-A, Non-B Hepatitis — Continued

Brand B factor IX complex recipients was a median of 7 weeks (range 2-17 weeks) from the date of transfusion to the onset of symptoms; for Brand A, the incubation period was a median of 15 weeks (range 1-19 weeks). Peak elevations in serum transaminases occurred a median of 9 weeks from the date of transfusion.

The attack rate for Brand B factor IX complex recipients was 42% (27/64), significantly higher than the 5% (3/55) attack rate for Brand A recipients (relative risk = 7.7, $p < 2 \times 10^{-5}$) or the 0% (0/59) in nonrecipients ($p < 1 \times 10^{-6}$). The difference in attack rates between Brand A factor IX complex recipients and nonrecipients was not statistically significant ($p > 0.05$).

The attack rate for Brand B recipients was about 40%, and that for nonrecipients of factor IX was 0%, irrespective of quantity of other blood products (Table 1). A similar comparison of Brand B to Brand A factor IX recipients showed no differences in receipt of other blood products; a stepwise multiple regression analysis of all factor IX recipients showed that receiving Brand B factor IX was the only risk factor significantly associated with hepatitis ($p < 0.0001$).

Units of Brand B factor IX complex given to surgery patients came from five different lots. Each lot was associated with cases and probable cases. Attack rates for single-lot recipients ranged from 14% to 100% (Table 2).

Reported by D Matthews, R Harmon, MD, Maricopa County Div of Public Health, SJ Englender, MD, LF Novick, MD, Director, GG Caldwell, MD, State Epidemiologist, Arizona Dept of Health Svcs; C'v of Field Svcs, Epidemiology Program Office, Hepatitis Br, Div of Viral Diseases, Center for Infectious Diseases, CDC.

TABLE 1. Risk of non-A, non-B hepatitis in surgery patients, by receipt of factor IX and other blood products — Arizona, January 1984-June 1985.

	Factor IX Recipients					
	Brand A		Brand B		Nonrecipients	
Exposure	No.	Attack Rate	No.	Attack Rate	No.	Attack Rate
All patients	55	5%	64	42%	59	0%
Packed red blood cells						
> 10 units	29	3%	33	36%	4	0%
< 10 units	26	8%	31	48%	55	0%
Fresh frozen plasma						
> 6 units	35	9%	33	42%	7	0%
< 6 units	20	0%	31	42%	52	0%
Platelets						
Yes	43	5%	52	44%	10	0%
No	12	8%	12	33%	49	0%

TABLE 2. Lot-specific attack rates of postsurgical non-A, non-B hepatitis for single-lot cardiovascular recipients of Brand B factor IX — Arizona, October 1984-June 1985.

Lot	Ill	Not ill	Attack rate
1	1	6	14%
2	2	3	40%
3	17	25	40%
4	2	1	67%
5	5	0	100%
Total	**27**	**35**	**44%**

Non-A, Non-B Hepatitis – Continued

Editorial Note: Clotting factor preparations have frequently been linked to the transmission of non-A, non-B hepatitis (*1,2*). These products are prepared from pooled plasma from multiple donors. Inoculation of nonheat-treated products into susceptible animals (chimpanzees) is associated with development of non-A, non-B hepatitis. In hemophilia patients who routinely receive commercial factor preparations, episodes of non-A, non-B hepatitis are common, and as many as 50% may develop signs of chronic liver disease, probably due to non-A, non-B infections. Studies in first-exposed hemophilia patients and in surgery patients who receive clotting factor preparations suggest the risk of non-A, non-B hepatitis in these patients may be close to 100% (*3,4*). Heat treatment of clotting factor products was initiated at about the time of the outbreak; however, none of the products used in this outbreak received heat treatment. While all factor IX complex and antihemophilic factor preparations are now treated to reduce the risk of viral disease transmission, the methods currently used do not appear to inactivate the causative agents of non-A, non-B hepatitis (*5,6*).

Non-A, non-B hepatitis in the United States is probably caused by at least two different viral agents (*1,7*). Because of difficulty in conclusively identifying the causative agents and developing serologic tests, it remains a diagnosis of exclusion. Epidemiologic studies indicate

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TABLE I. Summary—cases specified notifiable diseases, United States

Disease	24th Week Ending			Cumulative, 24th Week Ending		
	June 14, 1986	June 15, 1985	Median 1981-1985	June 14, 1986	June 15, 1985	Median 1981-1985
Acquired Immunodeficiency Syndrome (AIDS)	274	189	N	5,701	3,273	N
Aseptic meningitis	110	123	139	2,047	1,823	1,926
Encephalitis: Primary (arthropod-borne & unspec.)	18	17	20	339	420	419
Post-infectious	2	6	2	50	67	51
Gonorrhea: Civilian	15,994	19,725	18,900	372,790	386,853	406,180
Military	243	370	450	7,149	8,649	11,108
Hepatitis: Type A	447	401	401	9,974	9,782	10,071
Type B	565	584	515	11,582	11,434	10,723
Non A, Non B	70	88	N	1,577	1,882	N
Unspecified	78	117	139	2,213	2,524	3,358
Legionellosis	4	27	N	238	310	N
Leprosy	4	12	3	126	174	108
Malaria	24	20	20	366	349	354
Measles: Total*	148	230	60	3,522	1,615	1,615
Indigenous	143	220	N	3,340	1,354	N
Imported	5	10	N	182	261	N
Meningococcal infections: Total	52	30	49	1,404	1,329	1,590
Civilian	52	30	49	1,402	1,324	1,575
Military	-	-	-	2	5	7
Mumps	184	59	85	2,003	1,824	2,000
Pertussis	52	58	33	1,180	772	772
Rubella (German measles)	34	11	29	277	265	638
Syphilis (Primary & Secondary): Civilian	445	449	586	11,423	11,349	13,764
Military	-	-	7	83	83	176
Toxic Shock syndrome	6	3	N	160	178	N
Tuberculosis	457	475	507	9,441	9,211	10,317
Tularemia	4	4	6	34	67	80
Typhoid fever	2	4	7	110	134	151
Typhus fever, tick-borne (RMSF)	30	18	43	175	177	222
Rabies, animal	80	89	144	2,467	2,339	2,878

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1986		Cum 1986
Anthrax	-	Leptospirosis	17
Botulism: Foodborne (Wyo. 1)	4	Plague	-
Infant	22	Poliomyelitis, Paralytic	-
Other	1	Psittacosis (Pa. 1, Ohio 1, Md. 1, Nev. 2)	35
Brucellosis	30	Rabies, human	-
Cholera	-	Tetanus (Kans. 1, Tex. 2)	20
Congenital rubella syndrome	2	Trichinosis	14
Congenital syphilis, ages < 1 year	11	Typhus fever, flea-borne (endemic, murine)	10
Diphtheria	-		

*Four of the 148 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending June 14, 1986 and June 15, 1985 (24th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum 1986	1986	Cum 1986	Cum 1986	Cum 1986	Cum 1985	1986	1986	1986	1986	1986	Cum 1986
UNITED STATES	5,701	110	339	50	372,790	366,853	447	565	70	78	4	126
NEW ENGLAND	254	1	9	2	8,668	10,885	13	43	5	7	1	6
Maine	12	-	-	-	427	463	2	5	-	-	-	-
N H	6	-	2	-	218	226	-	-	-	-	-	-
Vt	2	-	2	1	119	127	2	1	1	-	1	-
Mass	133	1	2	-	3,770	4,122	8	24	4	7	-	6
R I	14	-	-	-	793	826	-	2	-	-	-	-
Conn	87	-	3	1	3,341	5,121	1	11	-	-	-	-
MID ATLANTIC	2,196	3	51	4	63,421	54,439	19	29	3	1	-	11
Upstate N Y	207	1	19	3	7,499	7,309	12	9	1	-	-	1
N Y City	1,497	2	12	-	36,724	26,412	1	3	-	-	-	9
N J	337	-	6	-	8,202	9,252	6	17	2	1	-	-
Pa	155	-	14	1	10,996	11,466	-	-	-	-	-	1
E N CENTRAL	346	13	73	7	49,732	51,339	23	60	4	6	-	4
Ohio	65	3	20	2	12,920	13,260	8	22	1	1	-	-
Ind	38	3	9	2	5,623	5,059	3	1	-	1	-	-
Ill	170	1	18	2	13,660	13,883	9	7	1	3	-	3
Mich	56	6	24	1	15,283	14,539	3	30	2	1	-	1
Wis	17	-	2	-	2,246	4,598	-	-	-	-	-	-
W N CENTRAL	98	10	10	8	16,371	18,112	19	19	1	1	2	2
Minn	42	2	6	-	2,328	2,723	1	-	-	-	-	1
Iowa	8	3	4	-	1,659	1,941	-	3	-	-	-	-
Mo	28	2	-	-	8,395	8,467	7	11	-	1	2	-
N Dak	2	-	-	-	142	131	1	-	-	-	-	-
S Dak	1	2	-	-	340	337	3	-	-	-	-	-
Nebr	5	-	-	1	1,129	1,554	4	4	1	-	-	-
Kans	12	1	-	7	2,387	2,959	3	1	-	-	-	1
S ATLANTIC	727	32	51	15	89,956	80,209	40	137	16	13	1	1
Del	12	1	3	-	1,558	1,795	2	2	-	-	-	-
Md	78	11	16	-	11,412	12,996	-	9	1	-	-	-
D C	103	-	-	-	7,526	6,583	-	1	1	-	-	-
Va	79	8	16	1	8,086	8,202	9	30	6	2	-	1
W Va	2	-	7	-	1,070	1,112	1	3	-	-	-	-
N C	34	3	8	1	15,380	15,596	1	17	1	1	1	-
S C	19	1	-	-	8,423	9,699	1	9	-	-	-	-
Ga	87	2	-	-	9,359	-	7	20	-	1	-	-
Fla	313	6	1	13	27,142	24,226	19	46	7	9	-	-
E S CENTRAL	71	5	22	3	31,731	31,376	5	20	1	2	-	1
Ky	14	3	9	1	3,633	3,512	3	7	-	-	-	-
Tenn	36	-	2	1	12,264	12,507	1	5	1	2	-	-
Ala	13	1	10	1	8,999	10,089	1	6	-	-	-	1
Miss	8	1	1	-	6,835	5,268	-	2	-	-	-	-
W S CENTRAL	431	15	36	3	47,150	49,916	73	60	7	13	-	9
Ark	17	-	-	-	4,393	4,761	4	4	-	-	-	-
La	73	1	2	-	8,497	10,123	4	11	-	1	-	-
Okla	17	1	8	-	5,492	5,251	14	3	2	-	-	-
Tex	324	13	26	3	28,768	29,781	51	42	5	12	-	9
MOUNTAIN	152	4	16	1	11,630	11,924	42	36	9	11	-	9
Mont	3	-	-	1	320	335	-	2	-	2	-	-
Idaho	1	-	-	-	395	392	2	-	1	-	-	-
Wyo	4	-	2	-	275	293	1	-	1	-	-	-
Colo	81	1	3	-	3,004	3,692	1	7	2	2	-	3
N Mex	6	-	1	-	1,177	1,360	5	1	1	-	-	-
Ariz	38	2	7	-	3,820	3,459	32	19	4	6	-	4
Utah	8	1	2	-	493	502	1	2	-	1	-	-
Nev	11	-	1	-	2,146	1,891	-	5	-	-	-	2
PACIFIC	1,426	27	71	7	54,131	58,653	213	161	24	24	-	83
Wash	50	-	7	-	4,145	4,134	26	23	3	9	-	10
Oreg	32	-	-	-	2,199	2,883	7	3	1	-	-	-
Calif	1,321	26	62	7	45,784	49,392	180	132	20	15	-	60
Alaska	9	1	2	-	1,364	1,396	-	1	-	-	-	-
Hawaii	14	-	-	-	639	848	-	2	-	-	-	13
Guam	-	-	-	-	59	85	1	-	-	-	-	1
P R	57	1	3	-	1,062	1,683	1	1	-	1	-	7
V I	2	-	-	-	103	225	-	-	-	-	-	-
Pac. Trust Terr	-	-	-	-	148	421	4	-	-	-	-	18
Amer Samoa	-	U	-	-	19	-	U	U	U	U	U	1

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 14, 1986 and June 15, 1985 (24th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1986	1986	Cum. 1986	1986	Cum. 1986	Cum. 1985	Cum. 1986	1986	Cum. 1986	1986	Cum. 1986	Cum. 1985	1986	Cum. 1986	Cum. 1985
UNITED STATES	366	143	3,340	5	182	1,615	1,404	184	2,003	52	1,180	772	34	277	265
NEW ENGLAND	23	-	24	-	4	117	102	-	40	-	60	38	4	8	9
Maine	1	-	-	-	-	-	21	-	-	-	2	3	-	-	-
N.H.	1	-	-	-	-	-	5	-	10	-	23	20	-	1	2
Vt.	1	-	-	-	-	-	15	-	1	-	3	2	-	-	-
Mass.	11	-	21	-	3	110	19	-	3	-	16	5	4	4	6
R.I.	3	-	2	-	-	-	15	-	7	-	1	4	-	2	-
Conn.	6	-	1	-	1	7	27	-	19	-	15	4	-	1	1
MID. ATLANTIC	42	54	1,169	1	20	145	216	3	103	-	100	70	-	27	76
Upstate N.Y.	11	4	27	1§	19	67	70	3	38	-	67	37	-	19	11
N.Y. City	11	34	272	-	1	39	45	-	5	-	3	9	-	5	42
N.J.	7	15	850	-	-	16	29	-	29	-	7	2	-	3	11
Pa.	13	1	20	-	-	23	72	-	31	-	23	22	-	-	12
E.N. CENTRAL	16	2	509	-	12	410	185	159	1,170	12	179	104	-	13	20
Ohio	6	-	-	-	8	43	79	3	88	6	74	14	-	-	-
Ind.	-	-	-	-	-	1	17	-	21	3	22	11	-	-	-
Ill.	4	1	320	-	1	259	43	125	735	2	21	18	-	9	5
Mich.	6	1	15	-	-	52	44	31	186	1	21	14	-	3	14
Wis.	-	-	174	-	3	55	2	-	140	-	41	47	-	1	1
W.N. CENTRAL	11	16	171	-	16	9	74	1	66	1	66	61	1	8	16
Minn.	3	3	31	-	4	4	15	-	1	-	31	13	-	-	2
Iowa	1	8	25	-	1	-	10	-	13	-	9	3	1	1	-
Mo.	4	4	11	-	6	2	24	-	12	-	5	13	-	1	5
N. Dak.	-	-	11	-	1	2	-	-	2	-	2	6	-	-	2
S. Dak.	-	-	-	-	-	-	4	-	1	1	8	1	-	-	-
Nebr.	2	-	-	-	-	-	8	-	-	-	-	3	-	-	-
Kans.	1	1	93	-	4	1	13	1	37	-	11	22	-	6	7
S. ATLANTIC	49	6	384	-	50	173	275	6	122	9	418	171	1	9	30
Del.	-	-	1	-	-	-	1	-	-	3	216	-	-	-	1
Md.	9	-	19	-	8	29	35	1	10	4	68	72	-	-	1
D.C.	-	-	-	-	-	2	4	-	-	-	-	-	-	-	-
Va.	10	2	21	-	24	19	50	3	23	-	15	4	-	-	1
W. Va.	2	-	2	-	-	31	3	1	33	-	5	-	-	-	9
N.C.	4	-	1	-	1	3	45	-	11	-	18	8	-	-	-
S.C.	3	-	274	-	-	-	24	-	11	-	5	-	-	-	3
Ga.	5	4	54	-	14	8	43	-	12	2	74	55	-	-	-
Fla.	16	-	12	-	3	81	70	1	22	-	17	32	1	9	15
E.S. CENTRAL	7	-	3	-	-	1	82	-	18	1	21	6	-	1	1
Ky.	2	-	-	-	-	-	17	-	3	-	1	1	-	1	1
Tenn.	-	-	1	-	-	-	33	-	12	-	5	1	-	-	-
Ala.	3	-	-	-	-	-	22	-	2	1	15	2	-	-	-
Miss.	2	-	2	-	-	1	10	-	1	-	-	2	-	-	-
W.S. CENTRAL	31	4	494	1	30	194	114	6	130	6	92	122	4	52	21
Ark.	-	-	276	-	2	-	15	-	7	-	3	11	-	-	1
La.	4	-	1	-	-	18	16	-	2	1	5	5	-	-	-
Okla.	3	-	8	-	4	-	15	N	N	5	56	69	-	-	1
Tex.	24	4	209	1†	24	176	68	6	121	-	28	37	4	52	19
MOUNTAIN	12	23	255	-	21	433	68	3	181	6	117	35	7	15	4
Mont.	-	1	1	-	7	137	7	-	5	-	6	3	1	1	-
Idaho	1	-	1	-	-	103	1	-	3	1	27	-	-	-	1
Wyo.	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-
Colo.	3	-	2	-	4	6	10	-	9	4	36	10	1	1	-
N. Mex.	-	4	26	-	5	3	6	N	N	-	10	4	-	-	2
Ariz.	5	18	225	-	5	184	14	3	152	-	24	10	-	1	1
Utah	2	-	-	-	-	-	7	-	9	1	13	8	5	9	-
Nev.	1	-	-	-	-	-	21	-	3	-	-	-	-	3	-
PACIFIC	175	38	331	3	29	133	288	6	173	17	127	165	17	144	88
Wash.	14	10	70	3†	14	1	41	-	7	7	49	24	1	6	2
Oreg.	12	-	-	-	4	3	21	N	N	-	8	19	-	-	1
Calif.	149	28	242	-	10	115	216	5	152	9	65	110	16	136	55
Alaska	-	-	-	-	-	-	9	1	5	1	2	9	-	-	1
Hawaii	-	-	19	-	1	14	1	-	9	-	3	3	-	2	29
Guam	1	-	3	-	-	10	-	1	4	-	-	-	-	2	1
P.R.	4	-	18	-	-	46	2	-	20	1	7	4	-	58	19
V.I.	-	-	-	-	-	10	-	1	10	-	-	-	-	-	-
Pac. Trust Terr.	-	-	-	-	-	-	1	-	3	-	-	-	-	-	-
Amer. Samoa	-	U	2	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 14, 1986 and June 15, 1985 (24th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum 1986	Cum 1985	1986	Cum 1986	Cum 1985	Cum 1986	Cum 1986	Cum 1986	Cum 1986
UNITED STATES	11,423	11,349	6	9,441	9,211	34	110	175	2,467
NEW ENGLAND	231	254	2	309	311	-	4	1	3
Maine	16	7	1	26	22	-	-	-	-
N H	7	5	-	9	14	-	-	-	-
Vt	6	2	-	10	4	-	-	-	-
Mass	119	131	1	143	188	-	3	1	-
R I	13	7	-	21	27	-	-	-	1
Conn	71	102	-	100	56	-	1	-	2
MID ATLANTIC	1,652	1,578	2	1,870	1,702	-	12	3	184
Upstate N Y	84	112	-	271	279	-	1	1	31
N Y City	933	973	-	929	864	-	5	-	-
N J	313	311	2	343	197	-	5	1	7
Pa	322	162	-	327	362	-	1	1	146
E N. CENTRAL	483	524	-	1,158	1,123	-	8	32	54
Ohio	64	65	-	191	208	-	1	32	5
Ind	58	51	-	131	138	-	-	-	9
Ill	260	267	-	517	496	-	1	-	15
Mich	74	114	-	263	222	-	5	-	9
Wis	27	27	-	56	59	-	1	-	16
W N. CENTRAL	116	115	-	271	237	8	5	12	397
Minn	18	27	-	68	41	-	1	1	43
Iowa	6	14	-	23	36	1	-	-	88
Mo	63	51	-	138	112	7	4	4	42
N Dak	2	1	-	4	2	-	-	-	97
S Dak	1	4	-	10	13	-	-	1	89
Nebr	11	6	-	5	9	-	-	3	7
Kans	15	12	-	23	24	-	-	3	31
S ATLANTIC	3,170	2,813	1	1,834	1,928	4	14	68	583
Del	21	17	-	21	17	-	-	-	-
Md	196	189	-	135	183	1	4	7	321
D C	151	175	1	65	80	-	1	-	-
Va	193	144	-	161	173	1	3	14	91
W Va	9	4	-	53	48	-	2	4	13
N C	229	314	-	240	235	1	2	18	3
S C	299	347	-	221	231	-	-	22	20
Ga	383	-	-	273	309	1	-	3	78
Fla	1,689	1,623	-	665	652	-	2	-	57
E S. CENTRAL	774	957	-	844	863	3	1	23	141
Ky	35	33	-	212	183	2	-	5	46
Tenn	290	284	-	243	268	1	-	8	56
Ala	258	305	-	278	272	-	-	3	39
Miss	191	335	-	111	140	-	1	7	-
W S. CENTRAL	2,433	2,827	-	1,152	937	16	7	30	400
Ark	120	143	-	150	110	10	-	1	95
La	405	485	-	186	158	1	-	-	11
Okla	66	82	-	110	126	4	1	24	34
Tex	1,842	2,117	-	706	543	1	6	5	260
MOUNTAIN	277	350	1	211	222	2	7	6	392
Mont	4	2	-	10	29	-	1	3	138
Idaho	5	3	-	6	11	-	-	-	-
Wyo	-	6	-	-	5	-	-	1	187
Colo	79	87	1	10	29	-	1	2	-
N Mex	33	45	-	46	42	1	-	-	3
Ariz	119	186	-	103	94	-	2	-	64
Utah	6	3	-	21	6	1	2	-	-
Nev	31	18	-	15	6	-	1	-	-
PACIFIC	2,287	1,931	-	1,792	1,888	1	52	-	313
Wash	52	61	-	96	103	-	2	-	2
Oreg	50	42	-	63	69	-	-	-	-
Calif	2,165	1,789	-	1,496	1,577	-	46	-	303
Alaska	-	1	-	27	56	1	1	-	8
Hawaii	20	38	-	110	83	-	3	-	-
Guam	1	2	-	30	21	-	-	-	-
P R	382	387	-	127	164	-	3	-	19
V I	-	1	-	1	1	-	-	-	-
Pac. Trust Terr	132	40	-	24	29	-	35	-	-
Amer Samoa	-	-	U	3	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending June 14, 1986 (24th Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	615	439	106	42	13	15	43
Boston, Mass. §	170	102	43	14	5	6	21
Bridgeport, Conn.	42	33	2	3	1	3	-
Cambridge, Mass.	24	17	5	1	-	1	2
Fall River, Mass.	42	34	6	2	-	-	1
Hartford, Conn.	42	28	7	6	1	-	2
Lowell, Mass.	26	23	1	1	1	-	1
Lynn, Mass.	19	17	2	-	-	-	-
New Bedford, Mass.	23	21	1	-	1	-	3
New Haven, Conn.	52	36	10	5	-	1	2
Providence, R.I.	61	42	8	7	1	3	7
Somerville, Mass.	5	5	-	-	-	-	-
Springfield, Mass.	47	35	11	-	-	1	3
Waterbury, Conn.	15	12	2	-	1	-	-
Worcester, Mass.	47	34	8	3	2	-	1
MID ATLANTIC	2,517	1,598	557	234	54	58	102
Albany, N.Y.	43	26	8	7	1	1	1
Allentown, Pa.	27	16	11	-	-	-	-
Buffalo, N.Y.	139	88	35	8	2	6	5
Camden, N.J.	36	24	8	2	1	1	1
Elizabeth, N.J.	33	24	8	1	-	-	-
Erie, Pa †	45	38	7	-	-	-	5
Jersey City, N.J.	41	28	7	4	1	1	2
N.Y. City, N.Y.	1,300	841	280	130	31	18	42
Newark, N.J.	91	35	27	17	3	7	4
Paterson, N.J.	39	18	11	8	1	1	4
Philadelphia, Pa.	301	189	64	32	2	14	15
Pittsburgh, Pa †	58	34	17	5	-	2	3
Reading, Pa.	35	29	5	1	-	-	3
Rochester, N.Y.	122	80	26	7	7	2	9
Schenectady, N.Y.	18	14	4	-	-	-	-
Scranton, Pa †	30	18	8	4	-	-	1
Syracuse, N.Y.	87	41	21	11	5	5	1
Trenton, N.J.	23	15	4	4	-	-	2
Utica, N.Y.	21	16	5	-	-	-	3
Yonkers, N.Y.	28	24	1	3	-	-	1
E.N. CENTRAL	2,287	1,446	490	184	79	88	93
Akron, Ohio	75	51	12	6	3	3	-
Canton, Ohio	45	29	11	2	2	1	6
Chicago, Ill §	584	362	125	45	10	22	16
Cincinnati, Ohio	146	95	28	7	13	3	14
Cleveland, Ohio	151	90	38	13	1	9	4
Columbus, Ohio	130	82	29	8	5	6	3
Dayton, Ohio	108	72	25	6	2	3	1
Detroit, Mich.	246	133	56	36	14	7	4
Evansville, Ind.	40	29	8	2	-	1	-
Fort Wayne, Ind.	56	40	11	3	2	-	2
Gary, Ind.	22	14	5	2	1	-	-
Grand Rapids, Mich.	61	45	7	6	2	1	5
Indianapolis, Ind.	174	101	42	14	9	8	8
Madison, Wis.	35	24	9	2	-	-	1
Milwaukee, Wis.	125	90	20	8	1	6	2
Peoria, Ill.	52	32	9	3	2	6	4
Rockford, Ill.	36	20	5	5	4	2	3
South Bend, Ind.	65	36	17	2	5	5	11
Toledo, Ohio	88	60	18	3	3	4	8
Youngstown, Ohio	68	41	15	11	-	1	1
W.N. CENTRAL	754	499	139	80	34	32	40
Des Moines, Iowa	80	58	13	3	6	-	5
Duluth, Minn.	31	21	5	1	1	3	2
Kansas City, Kans.	41	23	10	4	3	1	4
Kansas City, Mo.	121	81	29	5	2	4	10
Lincoln, Nebr.	28	19	6	1	2	-	-
Minneapolis, Minn.	88	51	12	8	7	10	4
Omaha, Nebr.	73	47	16	5	1	4	2
St. Louis, Mo.	151	97	29	14	7	4	5
St. Paul, Minn.	68	54	8	3	1	2	4
Wichita, Kans.	73	48	11	6	4	4	4
S. ATLANTIC	1,246	756	294	111	41	41	47
Atlanta, Ga.	142	92	28	16	3	3	3
Baltimore, Md.	254	158	57	22	9	8	6
Charlotte, N.C.	97	49	28	8	6	6	4
Jacksonville, Fla.	121	70	30	15	4	2	1
Miami, Fla. §	100	59	27	8	2	4	2
Norfolk, Va.	59	28	14	5	8	4	5
Richmond, Va.	100	57	29	8	2	4	11
Savannah, Ga.	50	25	16	4	2	3	3
St. Petersburg, Fla.	98	83	10	2	1	2	6
Tampa, Fla.	50	36	8	3	1	1	3
Washington, D.C.	160	87	45	20	2	4	3
Wilmington, Del.	15	12	2	-	1	-	-
E.S. CENTRAL	789	498	178	60	26	27	33
Birmingham, Ala.	111	66	23	7	6	9	1
Chattanooga, Tenn.	48	30	14	2	-	2	5
Knoxville, Tenn.	78	54	18	3	1	2	2
Louisville, Ky.	125	77	29	13	3	3	2
Memphis, Tenn.	155	104	30	12	6	3	11
Mobile, Ala.	118	68	28	14	3	5	8
Montgomery, Ala.	31	19	11	-	-	1	1
Nashville, Tenn.	123	80	25	9	7	2	3
W.S. CENTRAL	1,365	816	295	135	70	48	47
Austin, Tex.	67	40	11	9	5	2	2
Baton Rouge, La.	29	18	6	2	2	1	-
Corpus Christi, Tex.	32	14	11	2	4	1	1
Dallas, Tex.	204	120	41	27	8	8	3
El Paso, Tex.	57	32	13	6	3	3	2
Fort Worth, Tex.	93	66	14	5	2	6	6
Houston, Tex.	308	179	77	30	15	6	6
Little Rock, Ark.	72	44	19	4	3	2	3
New Orleans, La.	115	63	22	18	6	6	-
San Antonio, Tex.	220	129	49	21	12	8	13
Shreveport, La.	55	39	10	4	2	-	3
Tulsa, Okla.	113	72	22	7	7	5	8
MOUNTAIN	646	372	156	56	28	34	28
Albuquerque, N.Mex.	80	47	11	16	3	3	3
Colo. Springs, Colo.	34	17	10	4	2	1	6
Denver, Colo.	107	60	21	10	6	10	3
Las Vegas, Nev.	83	41	34	4	3	1	2
Ogden, Utah	21	14	5	1	-	1	1
Phoenix, Ariz.	148	69	45	13	8	13	3
Pueblo, Colo.	25	19	4	1	-	1	2
Salt Lake City, Utah	50	36	11	2	-	1	-
Tucson, Ariz.	98	69	15	5	6	3	8
PACIFIC	1,879	1,203	380	188	59	46	110
Berkeley, Calif.	19	17	1	1	-	-	2
Fresno, Calif.	81	52	15	6	4	4	8
Glendale, Calif.	35	29	6	-	-	-	1
Honolulu, Hawaii	57	39	10	6	2	-	2
Long Beach, Calif.	94	65	20	6	-	3	24
Los Angeles, Calif.	468	282	93	62	21	7	9
Oakland, Calif.	50	30	10	5	-	5	3
Pasadena, Calif.	23	17	3	1	-	2	1
Portland, Oreg.	138	92	27	5	6	8	4
Sacramento, Calif.	148	97	30	15	5	1	8
San Diego, Calif.	135	84	33	10	6	2	11
San Francisco, Calif.	200	104	56	32	6	2	9
San Jose, Calif.	187	130	33	18	2	4	16
Seattle, Wash.	127	80	28	12	4	3	2
Spokane, Wash.	73	52	10	5	3	3	8
Tacoma, Wash.	44	33	5	4	-	2	2
TOTAL	12,098 ††	7,627	2,595	1,060	404	389	543

* Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

** Pneumonia and influenza.

† Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

Non-A, Non-B Hepatitis – Continued

that percutaneous or bloodborne transmission routes predominate, with 20% of affected persons acquiring infection by blood transfusion, and 15%, by percutaneous drug abuse. Furthermore, non-A, non-B hepatitis now causes 80%-90% of the post-transfusion hepatitis observed in this country. Previously, outbreaks have been described in hemodialysis units (*8*) and plasmapheresis programs (*9*).

Non-A, non-B hepatitis associated with clotting factor preparations has been reported to be variable in clinical presentation, usually clinically milder with less icterus than other types of non-A, non-B hepatitis (*10*). The reasons for the severity of illnesses reported in this outbreak are not known. However, it could be due to either a different viral agent contaminating the clotting factor complex than that in previously reported outbreaks, to higher doses of the infectious organism, or to host-factor differences. The reasons for significantly different risks of illness associated with the products of different commercial manufacturers is also not known but possibly relates to differences in manufacturing processes or to differences in the donor pool that contributed to the respective products.

Because of the high risk of viral hepatitis, recommended use of clotting factor products has been limited to persons with known clotting factor deficiencies. In other settings, single-donor products carry a lower risk and are preferable. At least two outbreaks of non-A, non-B hepatitis have now been reported in surgery patients treated with clotting factor preparations (*4*). Prevention of non-A, non-B hepatitis in this population clearly depends on physicians adhering to strict indications for the use of clotting factor preparations and avoiding these products when at all possible.

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Occupational Exposures to Formaldehyde in Dialysis Units

A company in Illinois that operates three dialysis centers became concerned about the occupational exposure of its employees to formaldehyde. Formaldehyde is used as a chemical germicide to control bacterial contamination in water distribution systems and in the dialysis fluid pathways of artificial kidney machines. In addition, formaldehyde is used to disinfect hollowfiber dialyzers (artificial kidneys) that are reprocessed and reused only by the same patient.

Formaldehyde – Continued

The company requested an investigation by the National Institute for Occupational Safety and Health (NIOSH) to determine the extent of employee exposure to formaldehyde.

Investigators from NIOSH conducted an initial environmental survey of the facilities in April 1982 and a follow-up environmental survey in June 1982. In the areas used to reprocess dialyzers, they collected air samples to analyze for formaldehyde in the personal breathing zones of workers. The results showed that workers at two of the three facilities involved were exposed to formaldehyde concentrations of 0.50 and 0.57 parts per million (ppm), respectively, as a time-weighted average (TWA) (*1*). The current Occupational Safety and Health Administration standard establishes a permissible exposure of 3 ppm, 8-hour TWA; NIOSH recommends minimizing workplace exposure levels and limiting exposure to the lowest feasible level (*2,3*).

Based on NIOSH recommendations, the company modified the system used to deliver formaldehyde by incorporating an automatic metering system so that the operation did not have to be performed manually. In addition, the company changed work practices to include capping storage containers, running water continuously during the disinfection operation, and educating employees about the adverse health effects of formaldehyde. In a follow-up environmental survey, conducted in December 1982 after these changes were instituted, NIOSH found that TWA concentrations of formaldehyde at all three facilities had fallen below the limit of detection (5 μg/sample, about 0.34 ppm based on a 12-liter air sample).

NIOSH has also documented significant occupational exposures to formaldehyde in recent studies at several other dialysis units (*4-7*). Studies at hospitals in San Francisco and Honolulu showed airborne concentrations of formaldehyde as high as 0.9 ppm and 1.3 ppm, respectively. Employees in the dialysis units of both hospitals were experiencing cough, headache, and eye, nose, and throat irritation. These symptoms are consistent with the effects of exposure to formaldehyde vapor. In Denver, Colorado, another evaluation at a dialysis unit showed levels of formaldehyde ranging as high as 1.6 ppm (*6*). The two highest levels were found in the room where dialyzers were being reprocessed and disinfected with formaldehyde. At this evaluation, work practice was changed so that water was run continuously into the sink whenever the formaldehyde in a hemodialyzer was drained into that sink. This served to flush formaldehyde down the drain and lowered its airborne levels.

Reported by Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: Nearly 80,000 patients in the United States undergo maintenance dialysis at approximately 1,400 facilities licensed by the Health Care Financing Administration. About 80% of these dialysis centers use formaldehyde to disinfect hemodialysis systems that include treated water distribution systems, dialysis fluid proportioning systems, and artificial kidney machines. In 1983, over 50% of these dialysis centers reused the disposal hollowfiber dialyzers, and approximately 90% used formaldehyde to disinfect hemodialyzers during the reprocessing procedure (*8*). Consequently, the potential for environmental exposure of dialysis-center employees and dialysis patients to formaldehyde is relatively high.

Formaldehyde has a sharp odor that is noticeable at very low levels (less than 1 ppm). At formaldehyde concentrations ranging from 0.1 to 5 ppm, the first signs or symptoms of exposure are burning of the eyes, tearing (lacrimation), and general irritation to the upper respiratory passages (*9*). Higher exposures (10-20 ppm) may produce coughing, tightness in the chest, a sense of pressure in the head, and cardiac palpitation (*10,11*). In one report, inhalation provocation tests showed that hypersensitivity to the formaldehyde used to disinfect artificial kidney machines was responsible for attacks of wheezing accompanied by productive cough in two of 28 members of the nursing staff in a hemodialysis unit. Three other members of the same staff who were continuously exposed to this substance occupationally had devel-

Formaldehyde – Continued

oped similar recurrent but less frequent episodes since joining the unit (*12*). Dermatitis has also been reported among workers exposed to formaldehyde or to resins that contain formaldehyde (*13*).

To minimize exposure to formaldehyde in dialysis units, CDC recommends the following:

1. Employees working in dialysis units should be fully informed about the adverse health effects of formaldehyde and should wear proper protective equipment whenever handling concentrated formaldehyde or preparing dilute formaldehyde solutions. (Protective equipment should include rubber gloves, protective aprons, and eye and face protection.)
2. Hoses connecting free-standing modular components of hemodialysis systems to drain lines should be air tight to prevent formaldehyde vapors from escaping into treatment rooms.
3. Employees should spend as little time as possible in areas where hemodialyzers are reprocessed. Water should be kept running continuously in the sinks when the hemodialyzers are being reprocessed to help reduce exposure to formaldehyde.

Based on recent animal studies, which show that formaldehyde induces a rare form of nasal cancer (*14-16*), as well as epidemiologic investigations that indicate excess cancer rates in formaldehyde-exposed workers, CDC recommends that formaldehyde in the workplace be handled as an occupational carcinogen. As a prudent public health measure, engineering controls and stringent work practices should be employed to reduce occupational exposure to the lowest possible limit.

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Genital Herpes Infection — United States, 1966-1984

Genital herpes infection remains a major public health problem in the United States. Data collected by the National Disease and Therapeutic Index (NDTI) from 1966 to 1981 showed marked increases in the numbers of patient consultations for genital herpes (*1,2*). Current analysis shows continued upward trends in symptomatic genital herpes infections among private patients in the United States.

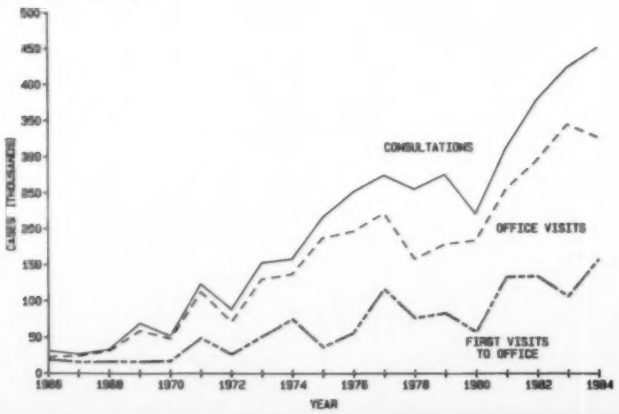
The NDTI survey is a national stratified random sample of data from private practitioners' office-based practices in the contiguous United States (*3*). This survey is a continuing compilation of statistical information about patterns and treatments of various diseases and represents a sample of patient-physician interactions. Included in the data coded are: (1) "consultations" about genital herpes between patients and physicians, including office visits, house calls, telephone calls, and hospital visits; (2) "office visits," referring to initial or repeat visits for genital herpes; and (3) "first office visits," coded if the patient presents to a physician participating in the survey for the first time with genital herpes. No laboratory confirmation of the physicians' diagnoses is included in the survey.

The estimated number of physician-patient consultations for genital herpes increased 15-fold between 1966 and 1984, from 29,560 to 450,570 (Figure 2). Office visits accounted for 79% of these consultations. Also, first office visits—a more likely indicator of newly acquired infection—increased nearly ninefold, from 17,810 in 1966 to 156,720 in 1984. Although a decline in consultations, office visits, and first office visits was evident from 1978 to 1980, the upward trends remain statistically significant for all three types of physician-patient interaction ($p < 0.004$).

The number of first office visits for genital herpes was approximately the same for both men and women. However, over the 19-year span, women made more total office visits for genital herpes than did men. In each of three time periods—1966-1972, 1973-1978, and 1979-1984—the number of consultations increased for men and women in each age group, except for men 40-44 years of age (Figure 3). Adults 20-29 years of age continued to account for the largest proportion of consultations in all age groups in each period.

Genital herpes infections increased uniformly in all regions of the country. The specialists most likely to see patients with genital herpes over the 19-year span were obstetricians-

FIGURE 2. Consultations, office visits, and first visits to office for genital herpes — United States, 1966-1984



Genital Herpes Infection -- Continued

gynecologists (36% of total), general practitioners (19%), dermatologists (13%), internists (12%), and urologists (5%). Office visits to all other types of specialists accounted for the remaining 15%.

Reported by Div of Sexually Transmitted Diseases, Center for Prevention Svcs, CDC.

Editorial Note: The trends in symptomatic genital herpes infection reported here are comparable to data reported from a population-based study in Rochester, Minnesota, where investigators found a consistent annual increase in the incidence of genital herpes from 1965 to 1979 (*4*). The Rochester study also showed a similar age distribution for patients with symptomatic genital herpes infections, as in this report.

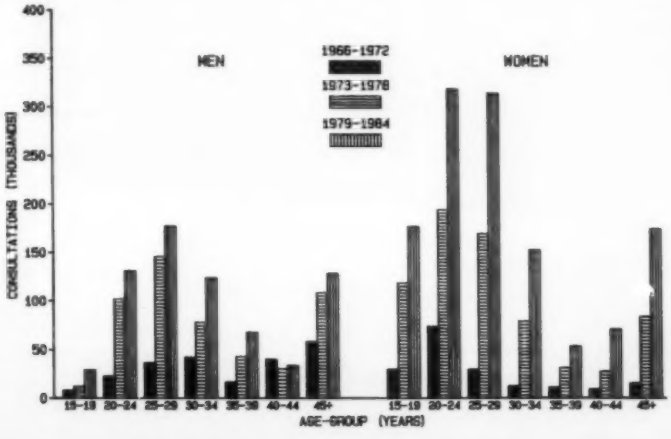
These data do not show the actual number of genital herpes cases in the United States. Patients with genital herpes may seek care in public health-care facilities and from other private ambulatory-care providers. Therefore, the total number of visits are minimum estimates. However, the data are useful in describing trends in health-care seeking for genital herpes by private patients over the 19-year period.

At least five other factors may have affected the trends in genital herpes measured by the NDTI:

1. Recent media attention—especially since 1982—may have increased both physicians' and patients' awareness of the signs and symptoms of genital herpes, thus increasing the numbers of patients seen in recent years.
2. A patient seen by a surveyed physician for the first time for genital herpes may not actually represent a newly diagnosed case.
3. Asymptomatic infections are increasingly recognized to be common and would not be represented in the survey (*5,6*).
4. Many of those with symptomatic genital herpes may not seek medical attention at all.
5. The licensing of topical acyclovir by the U.S. Food and Drug Administration in 1982 for treatment of genital herpes may account for some increase in numbers of patients seen in the most recent years of this survey.

Despite these caveats, upward trends of genital herpes among private patients probably reflect a true increase in the numbers of cases of this sexually transmitted disease nationwide.

FIGURE 3. Consultations for genital herpes, by age group and sex — United States, 1966-1984



Genital Herpes — Continued

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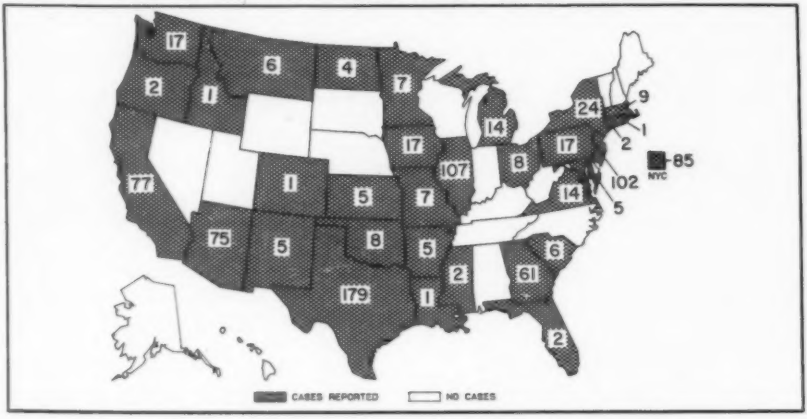
FIGURE I. Reported measles cases — United States, weeks 20-23, 1986



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